

Appendix D

Floodplain Analysis Coordination



MEETING MINUTES

DATE	June 10, 2020	
PROJECT	I-29 Exit 130 (Brookings) Interchange	BAI No.23192.00
SUBJECT	Floodplain Analysis	
LOCATION	Zoom Meeting	
ATTENDEES	Jackie Lanning, Brookings City Engineer	
	Robert Hill, Brookings County Floodplain Administrator	
	Richard Haugen, Brookings County	
	Staci Bungard, City of Brookings Floodplain Administrator	
	Tom Birney, Federal Emergency Management Agency (FEMA)	
	Tracie Harrison, FEMA	
	Kent Johnson, Banner Associates	
	Rich Uckert, Banner Associates	
	Becky Baker, Banner Associates	

1. INTRODUCTION OF THE PROJECT
 - A. BRIEF DISCUSSION OF PURPOSE AND NEED
 - B. OVERVIEW OF ALTERNATIVES
 - C. OVERVIEW OF PROJECT SCHEDULE

2. FLOODPLAIN ANALYSIS
 - A. DESIGNATED FLOODPLAIN
 - I. CURRENT
 - II. PROPOSED
 - B. DECISION TO BE MADE:
 - I. REGULATE TO EFFECTIVE FIRM USING 1D HEC-RAS MODEL IMPACT
 - II. REGULATE TO EFFECTIVE FIRM USING PROPOSED FEMA BLE (2D HEC-RAS MODEL)
 - III. REGULATE TO PROPOSED FEMA BLE
 - IV. FLOODPLAIN DEVELOPMENT PERMIT



DISCUSSION:

- A portion of the proposed interchange site is located within a FEMA “Zone A” Special Flood Hazard Area (SPFA) as identified on FEMA’s *effective* Flood Insurance Rate Map (FIRM). The local communities (City and County) regulate using the effective map; however, CFR and local ordinances allow use of “best available information” which includes BLE data. Since the effective FEMA map is more restrictive than the BLE map, we are required to regulate to the effective map. If the BLE map was more restrictive (more inundation area than the effective map), we could use it and the elevations from the BLE information. The effective Zone A areas were not created through detailed engineering methods and do not have Base Flood Elevations (BFEs) tied to it.
- The future BLE mapping show the interchange site is not located within it’s inundation area.
- The BLE information will be updated and eventually become the effective map in the future, unknown timeline due to COVID and funding. Best guess is two to four years when it will become effective.
- Current effective floodplain is Zone A, which allows up to 1 foot of rise. Zone A encroachment does not require modeling of impacts in the Floodplain Development Permit. Initial conservative 1D HEC-RAS modeling shows the alternatives for the project having a rise of 0.65 feet. To mitigate, the incorporation of a 50-foot-wide culvert would cause a rise of 0.50 feet.
- A Floodplain Development Permit is required because the project area is within a Zone A SFHA. A LOMR may or may not be required, coordination would occur with Floodplain Administrators to determine if required after completion of project. Definition of completion is not clear, likely during completion of construction. Timing of approval of new floodplain map may avoid the LOMR, the elevations could be provided to FEMA for incorporation in the new designated floodplain.
- A CLOMR is not required by FEMA for rise in a Zone A designated floodplain. A CLOMR could be requested by the community, but it is not likely for this area for a number of factors: it is in a Zone A SFHA, the impacted area is currently not developed, FEMA will be updating the map, and the conservative increase due to the project is less than 1-foot.
- A 50-foot-wide culvert is not required for mitigation and would cause concerns for drainage downstream. A culvert sized by drainage design standards should be incorporated at the drainage on the east side of the interstate. Brookings County would like their highway superintendent to review.

PREPARED BY Becky Baker and Kent Johnson

JUNE 11, 2020 - FURTHER CLARIFICATION FOLLOWING MEETING BETWEEN KENT JOHNSON AND TOM BIRNEY, FEMA REGION 8.

Following was noted by Kent Johnson. After yesterdays discussion with Tom Birney, he said that within a Zone A area, there is no defined allowable increase in floodwater. I think we generally "think" it is a 1-foot allowable because that is what is stated in the Zone AE and more restrictive regulations/ordinances and is standard floodplain managment practice. The 1-foot increase is used in SDDOT design guidelines for sizing structures (culverts/bridges) as the max allowable.

The allowable increase is not defined within a Zone A because the boudary was determined from an approximate study without any BFEs being established.

Here's my drainage law comment and Tom B also mentioned this - A landowner impacted by increased flood heights due to the project could potentially file a complaint.



MEETING MINUTES

DATE	06-23-2020	
PROJECT	I-29 EXIT 130 BROOKINGS INTERCHANGE- FLOODPLAIN	BAI No. 23192.00
SUBJECT	ROAD DESIGN / DRAINAGE MANUAL DESIGN HEADWATER	
LOCATION	Remote Teams Meeting	
ATTENDEES	Bob Hill, Richard Haugen – Brookings County Planning and Zoning	
	Jackie Lanning, Staci Bungard, Thad Drietz – City of Brookings	
	Kent Johnson – Banner Associates, Inc.	

1. Discuss floodplain administrator duties for interchange project.
 - a. Ordinances were reviewed very briefly which identify administrator duties for floodplain areas in the community. Need to determine impact of project within floodplain.
 - b. Project is within a Zone A (approximate floodplain study without BFEs).
 - i. A preliminary 1D HEC-RAS model was constructed; it showed a 0.7' rise due to the project.
 - c. To further analyze impact, ordinances and Federal Regulations allow the use of best available information.
 - i. Use FEMA 2D BLE model as recommended by Tom Birney from FEMA Region 8.
 - ii. *Preliminary FEMA maps developed by FEMA do not show the project within the future refined floodplain.*
2. FEMA 2D model adjustments and results/impact of interchange project
 - a. FEMA BLE HEC-RAS 2D model was used as best available information to show impact due to the project.
 - i. FEMA has started a map update process for Brookings county using the BLE 2D model, but it is in the beginning stages and will not become effective until 2-4 years depending on many factors such as funding and covid19.
 - ii. **Existing Conditions Model:** The BLE model was updated with culvert information surveyed with this project. ground survey of the project area also replaced lidar terrain in the existing model.
 - iii. **Proposed Conditions Model:** A future preliminary roadway embankment was added to the east side of the interstate to 34th Avenue. The existing culverts sizes were not changed in the proposed model.
 - b. There is no impact due to the project using the BLE 2D model. Water surface elevations do not change between the existing and proposed conditions model.
3. Floodplain Development Permit
 - a. A floodplain development permit will be submitted to the City and County which will document the impact of the project.



- b. A follow-up LOMR may be necessary. FEMA will be consulted with to determine course of action since project was shown not to have an impact.
- 4. Downstream drainage concerns
 - a. Downstream of the project area are sensitive properties of which there is an active drainage lawsuit.
 - b. Goal should be to maintain existing drainage patterns, so we do not cause another drainage issue and potentially another drainage lawsuit.
 - c. Golf Course area has some local drainage which does not seem correct in the BLE 2D Model. Additional breaklines were not included which may make the model perform closer to what the City has known to experience in past flooding events. **The FEMA BLE 2D HEC-RAS model will be updated and rerun to more closely model the flow through the future loops and existing drainage channels.**
 - d. After leaving the golf course, drainage pattern is east in a ditch along the north side of 20th Street South and then into a pond owned by Mills. Then it is within a drainage channel (not the Interstate 29 road side ditch) until it gets to the Bowes area and eventually through a box culvert under I-29.
 - e. **It is not favorable to drain golf course area drainage to the east side of the interstate. It is preferable to maintain drainage patterns through the loops.**
- 5. Setting the road gradeline of 20th Street South interchange.
 - a. We reviewed the City of Brookings Design Guidelines which use the 5-year and 100-year as the minor and major storm events.
 - b. Thad Drietz said 20th Street South will be a Minor Arterial street classification.
 - c. See Attachment 1 for Table 14 - Allowable Maximum Culvert Overtopping requirements from the City of Brookings Drainage Design and Technical Criteria Manual.
 - d. A previous conversation between Kent Johnson and Kevin Marton, SDDOT, confirmed design guidelines followed by SDDOT. See Attachment 2.
 - i. These requirements differ from City of Brookings requirements.
 - ii. The allowable design headwater elevation (25-year water surface elevation) should not exceed 1-ft below the low subgrade shoulder at the lowest point of the roadway within the drainage basin.
 - e. **After discussion, Jackie Lanning said they want to follow the SDDOT design guidance for a local collector even though the City's street classification is a Minor Arterial.**

PREPARED BY Kent R. Johnson, PE

Becky Baker

Subject: FW: Meeting notes from this mornings Floodplain Discussion - I29 Exist 130 Brookings Interchange

From: Kent Johnson <kentj@bannerassociates.com>
Sent: Monday, September 28, 2020 10:58 AM
To: Becky Baker <beckyb@bannerassociates.com>
Subject: FW: Meeting notes from this mornings Floodplain Discussion - I29 Exist 130 Brookings Interchange

Here's Tom's response below.

Thanks,
Kent

Kent R. Johnson, PE, CFM | Project Manager
Banner Associates, Inc. | Sioux Falls, SD
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Cell | 1.605.695.0921
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From: Birney, Thomas <thomas.birney@fema.dhs.gov>
Sent: Monday, September 28, 2020 10:52 AM
To: Kent Johnson <kentj@bannerassociates.com>
Subject: RE: Meeting notes from this mornings Floodplain Discussion - I29 Exist 130 Brookings Interchange

Good morning Kent,

Thank you very much for the email reminder. I apologize for the delay as I had marked this completed when it was not.

Both methodologies appear to be sound approaches. Ultimately, however, it is the community's decision on what methodology to use and if to accept the finding. It is the community's responsible to make that determination when considering issuing a floodplain development permit.

Please let me know if there are any other questions. Thanks.

Tom

From: Kent Johnson <kentj@bannerassociates.com>
Sent: Monday, September 28, 2020 9:12 AM
To: Birney, Thomas <thomas.birney@fema.dhs.gov>
Subject: FW: Meeting notes from this mornings Floodplain Discussion - I29 Exist 130 Brookings Interchange

Hi Tom,
Maybe you already sent me an email back, if you did, I'm not able to find it.

FHWA is requesting FEMA's concurrence with use of the BLE model in our determination of the new Brookings interchange that we had discussed previously. Would you be able to provide this? If we need to chat, please feel free to give me a call.

Thanks,
Kent

Kent R. Johnson, PE, CFM | Project Manager

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From: Kent Johnson

Sent: Tuesday, June 23, 2020 4:52 PM

To: Birney, Thomas <thomas.birney@fema.dhs.gov>

Cc: Becky Baker <beckyb@bannerassociates.com>

Subject: FW: Meeting notes from this mornings Floodplain Discussion - I29 Exist 130 Brookings Interchange

Hi Tom,
Hope all is well!

We had a discussion between the Floodplain Administrators (Brookings City and County) this morning regarding the floodplain analysis of the proposed interchange project.

The initial 1D model results showed a 0.7-ft rise. The 1D model is trying to analyze several drainageways coming together in a wide, combined floodplain may be better suited to a 2D model. As we discussed previously, FEMA's 2D HEC-RAS (BLE) model can be used as the *Best Available Data* and we incorporated the surveyed culverts into the model through 2D Connections which replaced breaklines that previously existed in our project area.

So, we basically end up in the 2D model with:

1. Effective Model (or Duplicate Effective Model, I didn't really compare the results of the 2D model other than spot check a couple points)
2. Corrected Effective Model (with 2D Connections, Culverts, and updated terrain within the project area with ground survey data)
3. Proposed Conditions Model (added road embankment above the current 100yr floodplain).

There is no change in water elevations due to the proposed improvements at the locations I checked immediately upstream of the project area. This information was conveyed to the floodplain administrators. A floodplain development permit will be submitted for approval. A CLOMR is ultimately up to the Community Floodplain Administrators.

I've been asked by the project team to have some sort of concurrence or documentation from FEMA that there are no floodplain impacts or what we did is acceptable. Since the project timeline is so condensed with the type of grant that was awarded, they don't want to find out a CLOMR is required prior to the project being constructed.

Thanks,
Kent

Kent R. Johnson, PE, CFM | Project Manager

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From: Kent Johnson

Sent: Tuesday, June 23, 2020 12:24 PM

To: Jacqueline Lanning <JLanning@cityofbrookings.org>; Thad Drietz <TDrietz@cityofbrookings.org>; Staci Bungard <SBungard@cityofbrookings.org>; Robert Hill <rhill@brookingscountysd.gov>; Richard Uckert <richu@bannerassociates.com>

Cc: Becky Baker <beckyb@bannerassociates.com>

Subject: Meeting notes from this mornings Floodplain Discussion - I29 Exist 130 Brookings Interchange

Attached are some notes from this mornings meeting. Please review and let me know if you want me to revise anything.

Thanks!

Kent

Kent R. Johnson, PE, CFM | Project Manager



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Becky Baker

From: Jacqueline Lanning <JLanning@cityofbrookings.org>
Sent: Tuesday, September 29, 2020 3:52 PM
To: Becky Baker
Cc: Kent Johnson
Subject: RE: Meeting notes from this mornings Floodplain Discussion - I29 Exist 130 Brookings Interchange

Hello,

I am confirming that I have been assigned the role of Floodplain Administrator for the City of Brookings and I also confirm that the City of Brookings is comfortable with the modeling utilizing the BLE information. Thank you.

Jackie Lanning, PE

Brookings City Engineer
605-692-6629

From: Becky Baker [mailto:beckyb@bannerassociates.com]
Sent: Tuesday, September 29, 2020 3:31 PM
To: Jacqueline Lanning <JLanning@cityofbrookings.org>
Cc: Kent Johnson <kentj@bannerassociates.com>
Subject: FW: Meeting notes from this mornings Floodplain Discussion - I29 Exist 130 Brookings Interchange

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Jackie,

As discussed in our meeting, would you please confirm that you as the City's Floodplain Administrator is comfortable with the modeling utilizing the BLE information? Appreciate it.

Thanks! Becky

From: Kent Johnson <kentj@bannerassociates.com>
Sent: Monday, September 28, 2020 10:58 AM
To: Becky Baker <beckyb@bannerassociates.com>
Subject: FW: Meeting notes from this mornings Floodplain Discussion - I29 Exist 130 Brookings Interchange

Here's Tom's response below.

Thanks,
Kent

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Becky Baker

From: Robert Hill <rhill@brookingscountysd.gov>
Sent: Tuesday, September 29, 2020 7:17 PM
To: Kent Johnson; Becky Baker
Cc: Robert Hill; Richard Haugen; Rae Lynn Maher; Mike Bartley
Subject: I29 Exit 130 Brookings Interchange

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Robert W. Hill

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Co nt e eo ent rector